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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,923	02/12/2002	Ho-Jin Kweon	1567.1026	3755

21171 7590 10/10/2003

STAAS & HALSEY LLP
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EXAMINER	
WILLS, MONIQUE M	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 10/10/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/072,923	KWEON ET AL.	
	Examiner	Art Unit	
	Wills M Monique	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 February 2002* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Priority

Republic of Korea foreign priority document(s) 2001-17299, filed February 12, 2002 and submitted under 35 U.S.C. 119(a)-(d), has/have been received and placed of record in the file.

Information Disclosure Statement

The information disclosure statement(s) filed February 12, 2002 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 .

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang U.S. Patent 5,783,328.

Wang teaches an electrode comprising $Li_{1+x}Mn_2O_4$ coated with lithium hydroxide and potassium hydroxide or sodium hydroxide (col. 2, lines 55-68). The mixture is compressed and utilized as a positive electrode material (col. 6, lines 45-50). The active material is coupled with a negative electrode with an electrolyte dispersed in between (col. 6, lines 40-55). The lithium cell inherently has a separator disposed between both electrodes.

Claim Rejections - 35 USC § 102

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> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3-6, 8,9, & 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohnishi et al. U.S. Patent 5,200,282.

Ohnishi teaches an electrode comprising a current collector, boundary portion and active material layer (col. 3, lines 10-15). The current collector is made of metal and the active material is a metal hydroxide (col. 3, lines 25-30). The current collector is coated with cobalt oxyhydroxide and an active material layer (col. 3, lines 40-50). The active material layer is further coated with cobalt oxyhydroxide (col. 4, lines 60-68). The

coating thickness of the oxyhydroxide is up to 3 microns (col. 3, lines 60-65) and said cobalt coating is present in an amount of 10 to 20 % of the collector coating (col. 7, lines 10-30). The cobalt oxyhydroxide is inherently one of an amorphous and a crystalline surface treatment. Therefore, the instant claims are anticipated by Ohnishi.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
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> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9, 11,12,23 & 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Amatucci et al. U.S. Patent 5,705,291.

Amatucci teaches a positive electrode composition layer coated on a current collector (col. 2, lines 60-68). The positive electrode composition layer comprises $LiMn_2O_4$ coated with a layer of boron oxide lithium hydroxide, aluminum oxide or mixtures thereof and heated to a temperature of about 400°C (col. 2, lines 15-30). The coating is inherently amorphous or crystalline. The coating mixture includes 0.4 to 1.0% by weight of lithiated borate to coat the active material (col. 5, lines 25-35). The

resulting electrode was placed in a Li-ion battery cell (col. 4, lines 60-68) inherently comprising a second electrode and separator.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10, 15-22, 23-24 &27-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Amatucci et al. U.S. Patent 5,705,291, in view of Jen U.S. Pub. 2002/0071913 and further in view of Howard U.S. Patent 6,558,844.

Amatucci teaches coating a current collector with active material comprising $LiMn_2O_4$ coated with a layer of boron oxide lithium hydroxide, aluminum oxide or mixtures thereof and heated to a temperature of about 400°C (col. 2, lines 15-30). The coating mixture includes 0.4 to 1.0% by weight of lithiated borate to coat the active material (col. 5, lines 25-35).

Amatucci is silent dipping the current collector in the coating liquid and heating between room temperature and 200°C for 1 to 20 hours . The reference is silent to employing $LiCoO_2$ as the active material.

Jen teaches that it is conventional to dip coat active material on the current collector in order to uniformly distribute the thickness of the coating and increase adhesion between the collector and the active material (pars. 4 & 5).

Howard teaches coating that $LiCoO_2$ is a commonly used alternative for coated lithium manganese oxide particles (col. 1, lines 10-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the dipping method of Jen when making the electrode of Amatucci in order to uniformly distribute the thickness of the coating and increase adhesion between the collector and the active material.

Regarding the heating temperature of the coating, it would have been obvious to one of ordinary skill in the art at the time the invention was made to decrease the heating temperature of the coating, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. The skilled artisan recognizes that varying the temperature directly affects the adhesion ability of the active material to the current collector.

Regarding the employment of $LiCoO_2$,it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the lithium cobalt oxide, since it has been held to be within general skill of a worker in the art to select a known material on the basis of is suitability for the intended use as a matter of obvious

design choice. In re Leshin, 125 USPQ 416. As evidenced by Howard, $LiCoO_2$ is a commonly used alternative to lithium manganese oxides.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang, and further in view of Miyamoto et al. U.S. Patent 6,582,855.

Wang teaches an electrode comprising $Li_{1+x}Mn_2O_4$ coated with lithium hydroxide and potassium hydroxide or sodium hydroxide (col. 2, lines 55-68). The mixture is compressed and utilized as a positive electrode material (col. 6, lines 45-50). The active material is coupled with a negative electrode with an electrolyte dispersed in between (col. 6, lines 40-55).

Wang does not expressly disclose a current collector.

Miyamoto et al. U.S. Patent 6,582,855 teaches that it is conventional to employ current collectors to capture and collect current from the electrode mixture (col. 3, lines 40-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the current collector of Miyamoto in the electrode of Wang in order to capture and collect current from the electrode mixture.

Regarding the process limitations of claims 4 and 5, in the event any differences can be shown for the product of said product-by-process claims, as opposed to the product taught by Wang, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results; see also *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

Conclusions

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 703-308-4333.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

09/12/03

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

DETAILED ACTION

Priority

Republic of Korea foreign priority document(s) 2001-17299, filed February 12, 2002 and submitted under 35 U.S.C. 119(a)-(d), has/have been received and placed of record in the file.

Information Disclosure Statement

The information disclosure statement(s) filed February 12, 2002 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 .

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3 & 25-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim1-2 & 23 & 25 of copending Application No. 10/046557 in view of Miyamoto et al. U.S. Patent 6,582,855. Claims 1 and 3 of the instant application is shown in claim 1 of 10/046557, wherein the positive active material is surface treated with a compound selected from a coating-element-included hydroxide, a coating-element-included oxyhydroxide, a coating-element-included oxycarbonate, a coating-element-included hydroxycarbonate, and mixtures thereof, wherein the coating element is selected from the group consisting of Mg, Al, Co, K, Na, Ca, Si, Ti, Sn, V, Ge, Ga, B and As. Claims 1 - 3 of the instant application is shown in claim 1 of 10/046557, wherein the positive active material is surface treated with a compound selected from a coating-element-included hydroxide, a coating-element-included oxyhydroxide, a coating-element-included oxycarbonate, a coating-element-included hydroxycarbonate, and mixtures thereof, wherein the coating element is selected from the group consisting of Mg, Al, Co, K, Na, Ca, Si, Ti, Sn, V, Ge, Ga, B and As and the lithiated compound is represented by formulas 1 to 13 of claim 2 of both the instant application and 10/046557. Claims 25-26 of the instant application is shown in claims 23 & 25 of 10/046,557, wherein the positive active material is surface treated with a compound selected from a coating-element-included hydroxide, a coating-element-included oxyhydroxide, a coating-element-included oxycarbonate, a coating-element-included hydroxycarbonate, and mixtures thereof,

wherein the coating element is selected from the group consisting of Mg, Al, Co, K, Na, Ca, Si, Ti, Sn, V, Ge, Ga, B and As.

Application 10/046557 does not expressly disclose a current collector.

Miyamoto et al. U.S. Patent 6,582,855 teaches that it is conventional to employ current collectors to capture and collect current from the electrode mixture (col. 3, lines 40-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the current collector of Miyamoto in the electrode of 10/046557 in order to capture and collect current from the electrode mixture.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 102

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> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang U.S. Patent 5,783,328.

Wang teaches an electrode comprising $Li_{1+x}Mn_2O_4$ coated with lithium hydroxide and potassium hydroxide or sodium hydroxide (col. 2, lines 55-68). The mixture is compressed and utilized as a positive electrode material (col. 6, lines 45-50). The active material is coupled with a negative electrode with an electrolyte dispersed in between (col. 6, lines 40-55). The lithium cell inherently has a separator disposed between both electrodes.

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Ohnishi teaches an electrode comprising a current collector, boundary portion and active material layer (col. 3, lines 10-15). The current collector is made of metal and the active material is a metal hydroxide (col. 3, lines 25-30). The current collector is coated with cobalt oxyhydroxide and an active material layer (col. 3, lines 40-50). The active material layer is further coated with cobalt oxyhydroxide (col. 4, lines 60-68). The coating thickness of the oxyhydroxide is up to 3 microns (col. 3, lines 60-65) and said cobalt coating is present in an amount of 10 to 20 % of the collector coating (col. 7, lines

10-30). The cobalt oxyhydroxide is inherently one of an amorphous and a crystalline surface treatment. Therefore, the instant claims are anticipated by Ohnishi.

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Jen teaches that it is conventional to dip coat active material on the current collector in order to uniformly distribute the thickness of the coating and increase adhesion between the collector and the active material (pars. 4 & 5).

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Wang does not expressly disclose a current collector.

Miyamoto et al. U.S. Patent 6,582,855 teaches that it is conventional to employ current collectors to capture and collect current from the electrode mixture (col. 3, lines 40-50).

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Regarding the process limitations of claims 4 and 5, in the event any differences can be shown for the product of said product-by-process claims, as opposed to the product taught by Wang, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results; see also *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

Conclusions

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The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

09/12/03

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700